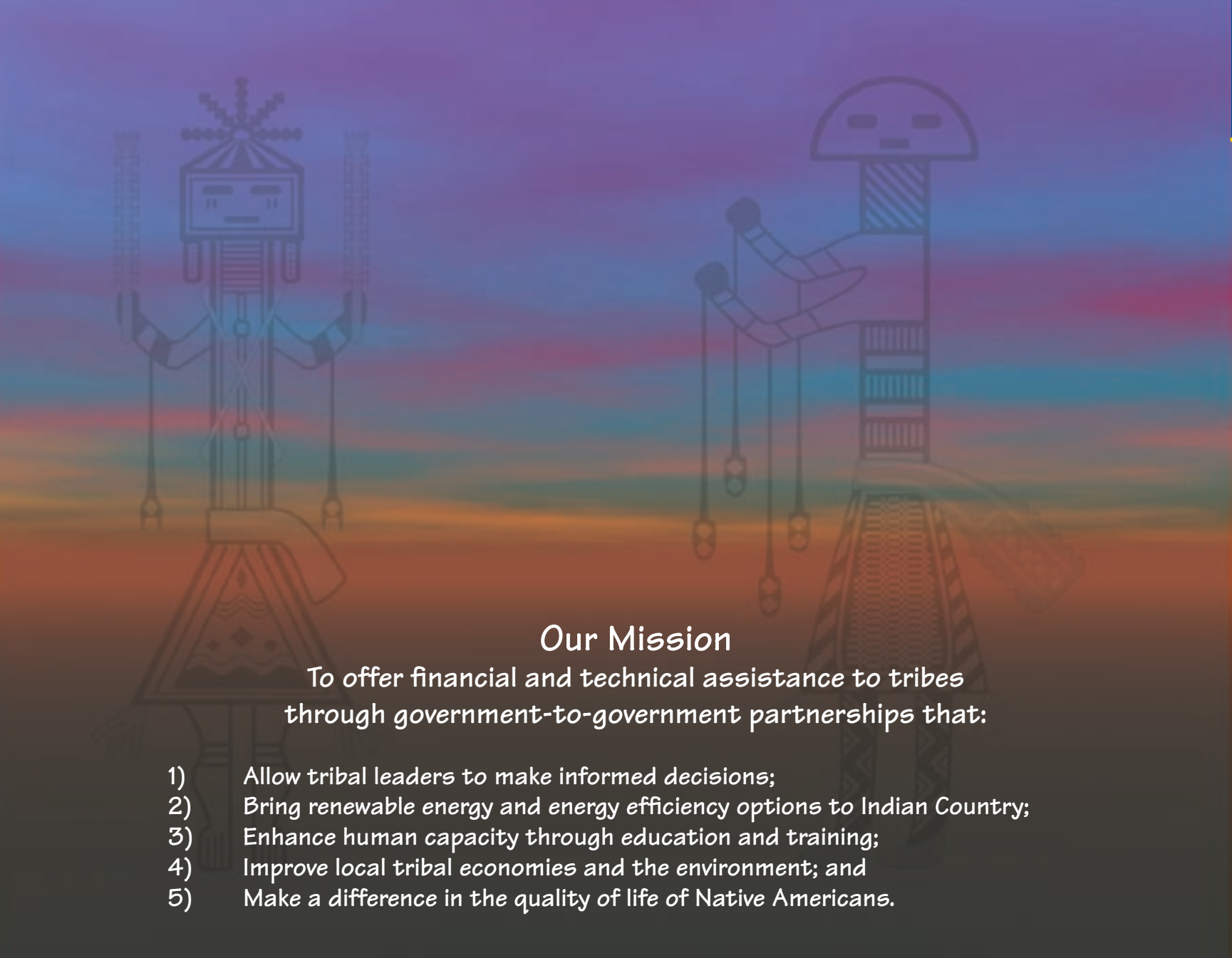
RENEWABLE ENERGY DEVELOPMENT ON TRIBAL LANDS

U.S. Department of Energy
Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable



Our Mission

To offer financial and technical assistance to tribes through government-to-government partnerships that:

1) Allow tribal leaders to make informed decisions;
2) Bring renewable energy and energy efficiency options to Indian Country;
3) Enhance human capacity through education and training;
4) Improve local tribal economies and the environment; and
5) Make a difference in the quality of life of Native Americans.

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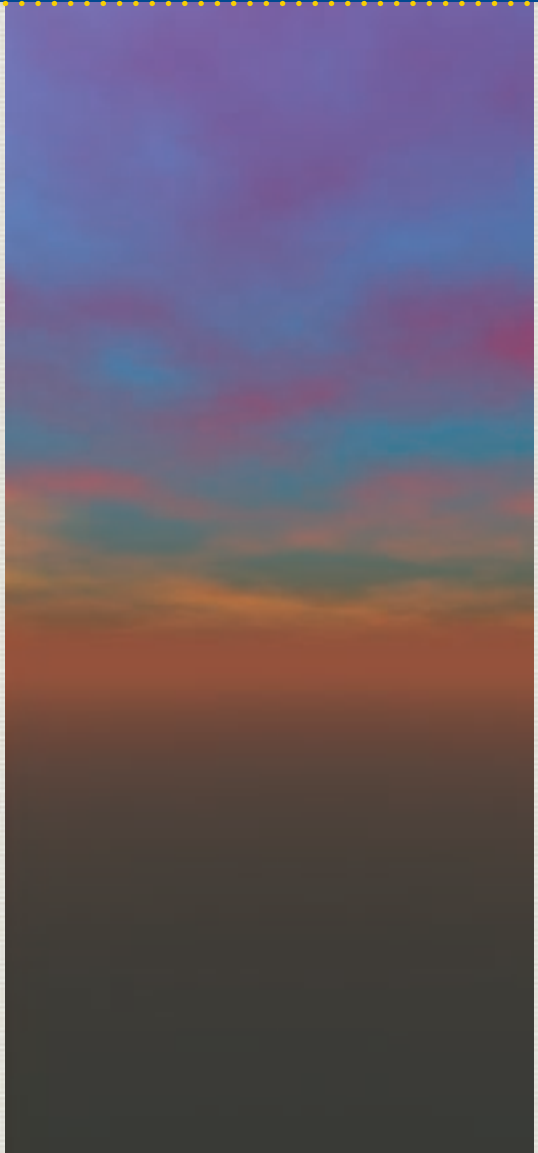
TRIBAL ENERGY PROGRAM

Purpose

The program promotes tribal energy sufficiency, economic development, and employment on tribal lands through the use of renewable energy and energy efficiency technologies.

The Tribal Energy Program under the Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy provides financial and technical assistance to Tribes for feasibility studies, and shares the cost of implementing sustainable renewable energy installations on tribal lands. The program also offers assistance for tribes to take the initial steps toward development including strategic planning, energy options analysis, human capacity building, and organizational development.



Policy

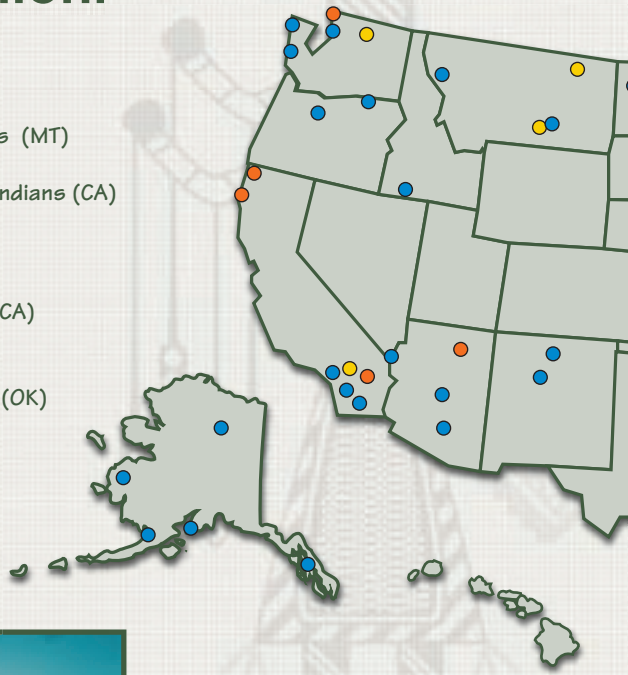
The U.S. Department of Energy's American Indian and Alaska Native Tribal Government Policy sets forth principles to be followed by DOE to ensure effective implementation of a government-to-government relationship with American Indians and Alaska Native tribal governments. Through the authorities set forth in EPAct and the Executive Orders, DOE is seeking to support energy sufficiency on tribal lands and support the trust responsibility set forth in DOE's American Indian and Alaska Native Tribal Government Policy.

For DOE's policy, visit
www.em.doe.gov/public/tribal/policy2.html

Turbine installed at Rosebud Sioux Reservation in South Dakota

Over the last two years, DOE has funded 45 tribal energy projects totaling $8.4 million.

- Development Projects (5)
  - Colville Confederated Tribes (WA)
  - Fort Peck Assiniboine & Sioux Tribes (MT)
  - Northern Cheyenne Tribe (MT)
  - Ramona Band of Cahuilla Mission Indians (CA)
  - Rosebud Sioux Tribe (SD)
- "First Steps" Projects (9)
  - Cabazon Band of Mission Indians (CA)
  - Citizen Potawatomi Nation (OK)
  - Hopi Tribe (AZ)
  - Fort Sill Apache Tribe of Oklahoma (OK)
  - Samish Indian Nation (WA)
  - Seneca Nation of Indians (NY)
  - Smith River Rancheria (CA)
  - White Earth Reservation (MN)
  - Yurok Tribe (CA)



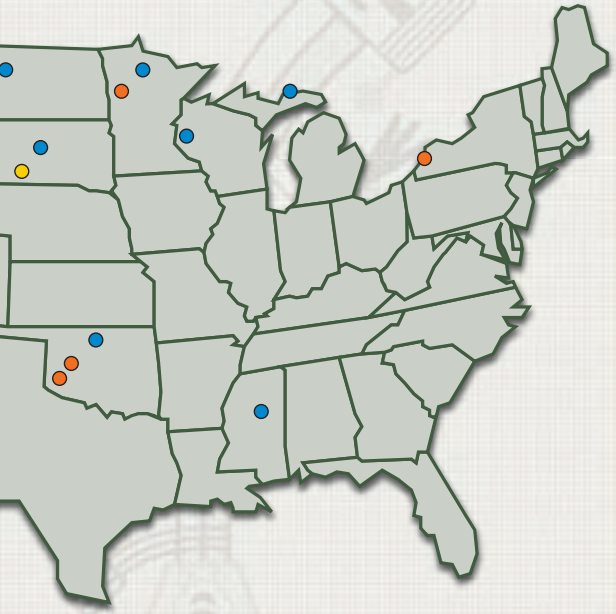
Ute Mountain Indian Reservation PV water pumping

Pueblo of Laguna solar electric installation

www.eere.energy.gov/tribalenergy/

TRIBAL ENERGY PROGRAM

- Development Projects (5)
- "First Steps" Projects (9)
- Feasibility Studies (31)



- Feasibility Studies (31)
  - Ak-Chin Indian Community (AZ)
  - Bristol Bay Native Corporation (AK)
  - Cherokee Nation (OK)
  - Confederated Tribes of Warm Springs (OR)
  - Flathead Reservation (MT)
  - Fort Mojave Tribe (AZ)
  - Kaw Nation of Oklahoma (OK)
  - Kenaitze Indian Tribe (AK)
  - Lower Brule Sioux Tribe (SD)
  - Makah Tribe (WA) - 2 projects
  - Manzanita Band of Mission Indians (CA)
  - Mesa Grande Band of Mission Indians (CA)
  - Mississippi Band of Choctaw Indians (MI)
  - Native Village of Venetie (AK)
  - Northern Cheyenne Nation (MT)
  - Pueblo of Jemez (NM)
  - Quinault Indian Nation (WA)
  - Red Lake Band of Chippewa Indians (MN)
  - St. Croix Tribal Government (WI)
  - Sault Ste. Marie Tribe (MI)
  - Sealaska Native Corporation (AK)
  - Shoshone Paiute Tribes (NV)
  - Taos Pueblo (NM)
  - Three Affiliated Tribes of the Fort Berthold Reservation (ND)
  - Tulalip Tribe (WA)
  - Umatilla Indian Reservation (OR)
  - Viejas Tribal Government (CA)
  - White Mountain Apache Tribe (AZ)
  - Yavapai-Apache Nation (AZ)
  - Yukon-Kuskokwim Health Corporation (AK)

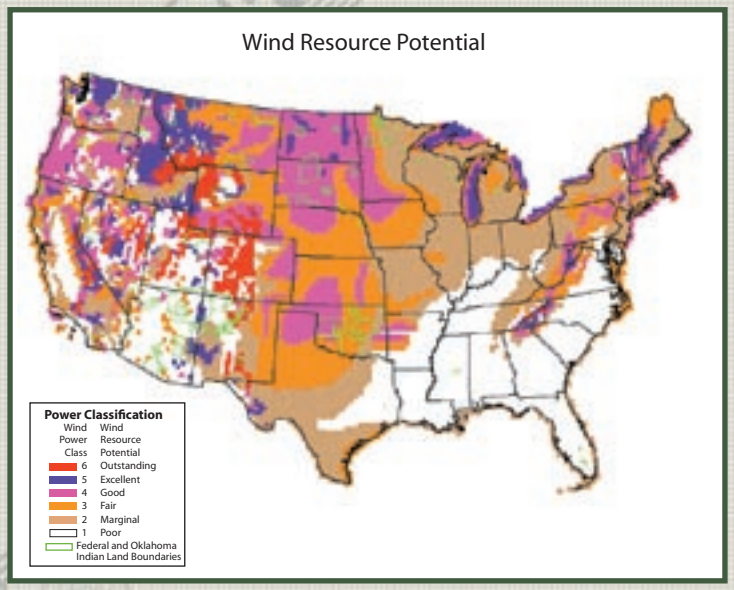
Northern Cheyenne Nation wind resource assessment

Jicarilla Apache Reservation PV array on Dulce High School

Solar electric array on Navajo home

Wind Energy

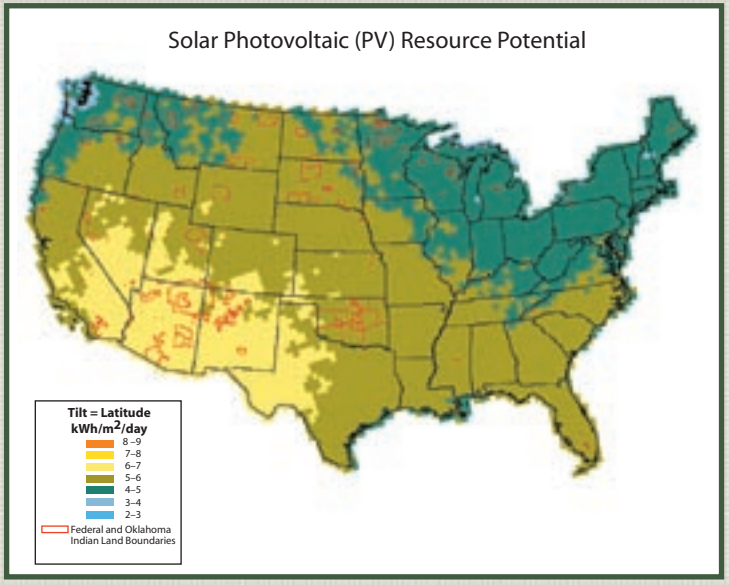
Wind energy uses the energy in the wind for generating electricity, charging batteries, pumping water, or grinding grain. Large, modern wind turbines operate together in wind farms to produce electricity for utilities. Small turbines are used by homeowners and remote villages to help meet energy needs.



Areas designated class 4 or greater are suitable for most utility-scale wind turbine applications, whereas class 2 and 3 areas are marginal for utility-scale applications but may be suitable for remote applications.

Solar Energy

A plot of land in the southwest 100 miles on a side could generate all the electricity used in the United States!



A distance from the nearest utility line of only a quarter mile raises distribution costs sufficiently to make PV cost-effective for small loads even in the cloudiest parts of the country.

For resource information, visit DOE's
Guide for Tribal Energy Development at

www.eere.energy.gov/tribalenergy/guide

www.eere.energy.gov/tribalenergy/

TRIBAL ENERGY PROGRAM

Biomass

Biomass offers the opportunity to produce fuel, electric power, chemicals, and other industrial materials from renewable resources including agricultural crops and residues, trees and forest residues, grasses, animal wastes, and organic municipal solid wastes. Fuel products include ethanol, which can be produced from wood chips, rice straw, switchgrass, sugar cane waste, and corn; and renewable biodiesel, which can be produced from grain and grain products.

Biomass and Biofuels Resource Potential

Today, various forms of biomass energy account for 45% of renewable energy used in the United States. Biomass resources must be assessed on a case-by-case basis. The most economic resources are often associated with residual materials from commercial or industrial processes.

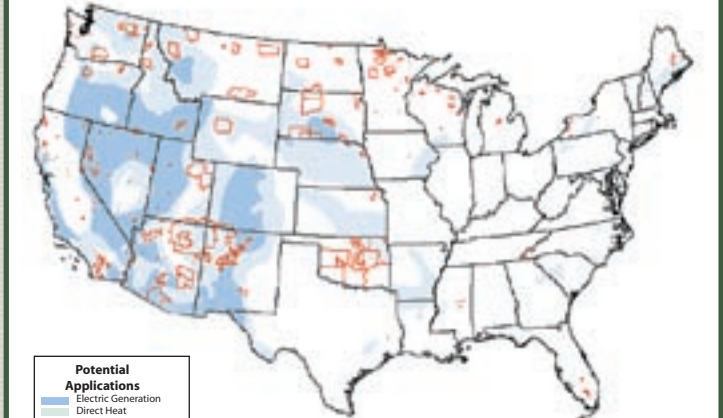
Hydropower

Hydropower plants capture the kinetic energy of falling water to generate electricity, using a turbine and a generator to convert the energy from the water to mechanical and then electrical energy. Hydropower currently contributes the greatest share of renewable electricity generation in the United States.

Geothermal Energy

Geo- (Earth) thermal (heat) energy is an enormous, underused heat and power resource that is clean, reliable, and homegrown (making us less dependent on fossil fuel). Earth's energy can be converted into heat and electricity. The three technology categories are geothermal heat pumps, direct-use applications, and electricity production.

Geothermal Resource Potential



Geothermal (or ground source) heat pumps use temperatures found a few feet below the surface to transfer heat from the ground to the building in winter and from the building to the ground in summer. The rate of installation of ground-source heat pumps is thought to be between 10,000 and 40,000 per year. Direct-use geothermal resources can be used to heat buildings, melt snow, grow plants in greenhouses, dehydrate onions and garlic, heat water for fish farming, and pasteurize milk. Utility-scale electric power can be produced using deep wells, drilled into underground reservoirs to tap steam and very hot water to drive turbines and generators.

Accomplishments

Nine tribes developing strategic energy plans and assessing energy organization formation

Thirty-one tribes assessing their renewable resources

- Twenty anemometers installed to collect wind resource data on tribal lands.
- White Mountain Apache and Mississippi Band of Choctaw Indians completed assessment of biomass resources and the potential for energy production.

Five renewable energy projects underway

- Successful installation of a substation at the Colville Indian Power and Veneer plant in Washington. Projected to reduce line losses and save between $160,000 and $260,000 per year.
- The Northern Cheyenne Tribe is pursuing a 30 MW wind farm.
- The Makah Nation in Washington is exploring a 30 MW wind farm and utility authority formation.
- The Assiniboine and Sioux Tribes of the Fort Peck Reservation are installing a utility-scale turbine at the community college, estimated to save $134,000 annually in electricity costs.
- After installing the first 750 kW wind turbine on tribal lands in the lower 48 states, the Rosebud Sioux Tribe is pursuing the predevelopment activities for a 30 MW wind farm.

Funding Opportunities

First steps

- Strategic planning
- Energy options analysis
- Capacity building
- Organizational development

Renewable energy development

- Feasibility studies
- Cost-shared development projects

Education Program

- Student internships
- Tribal college teach-the-teacher workshops
- Regional tribal workshops

Southwestern Indian Polytechnic Institute offers renewable energy classes at their New Mexico campus.

www.eere.energy.gov/tribalenergy/

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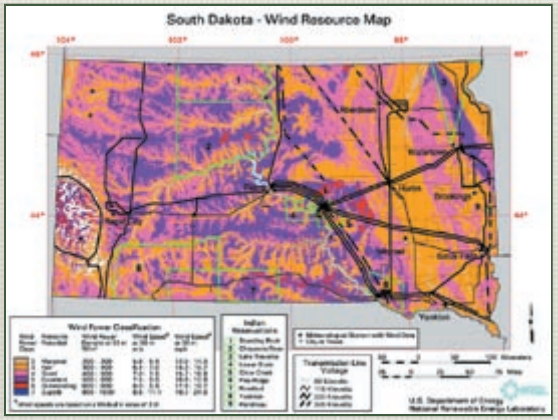

High-resolution wind prospecting maps are available for most tribal regions.

National Laboratory Technical Assistance

- Renewable energy technology information
- Renewable resource information
- Siting support
- Industry connections
- System performance models
- Policy information
- Design review
- Special studies

Information

Tribal energy Web site

- Features
- Current events
- Program information
- Project summaries
- Information resources
- Program contacts

www.eere.energy.gov/tribalenergy

Guide to tribal energy development

- Development process
  - Strategic planning
  - Options analysis
  - Organizational development
  - Project development
- Resource library
  - Energy resources
  - Technologies
  - Cost
  - Risk factors
  - Legal issues
  - Financing options
  - Contacts

www.eere.energy.gov/tribalenergy/guide

The Tribal Energy Program consists of program management through DOE headquarters, and program implementation through DOE's Golden Field Office and regional offices. Technical support is provided through the DOE laboratories.

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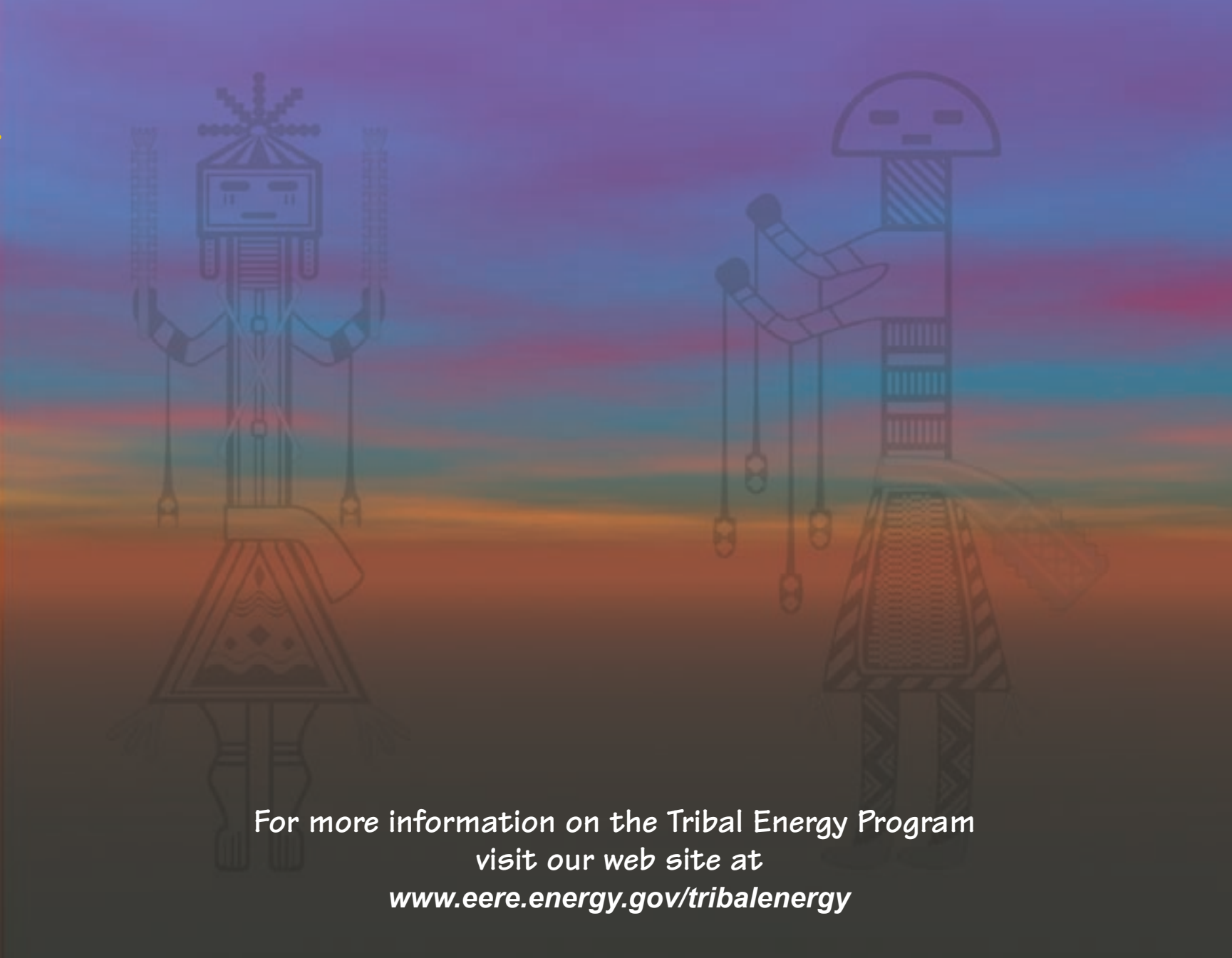

For more information on the Tribal Energy Program
visit our web site at
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A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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